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ABSTRACT

This study examined the effects of increasing the amount and quality of father-son interaction at home on attachment and separation behavior in the laboratory situation. Twenty boys, 12 months of age, and their low interacting fathers participated in this study. Twelve father-son pairs received a list of games to be played each evening over a 4-week period. A control group of eight low interacting father-son pairs did not initiate new activities. All children and both their mothers and fathers were assessed in a laboratory procedure before and after intervention. The children were examined in a free play situation with the mother and father present, and in a separation and reunion sequence involving both parents and a stranger. Results showed that children in the experimental group increased the number of interactions directed towards their fathers during free play following intervention relative to children in the control group. No apparent effects of increased father interaction were observed, however, on the display of protest occurring when the child was left alone with the stranger. (JMB)

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Fathers and Sons: An Experimental Facilitation of Attachment Behaviors

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Fathers and Sons: An Experimental Facilitation of Attachment Behaviors

Attachment behaviors, including separation protest, have been a primary focus of research on infant social development during the past ten years. However, the emphasis on this research has been on the measurement, description, and correlation of attachment behaviors to parental caretaking characteristics. Surprisingly, there has been almost no effort to experimentally manipulate attachment behaviors. In one of the few studies that used an experimental approach to study complex infant social reactivity, Rheingold (1956) demonstrated that infant social responsiveness could be modified through contingent adult interaction. She assumed the caretaking responsibilities for a sample of four-month-old, institutionalized infants over an eight week period. For part of the sample, attention and affection were provided contingent upon social responsiveness. Testing at the end of the treatment period, revealed that the experimental infants looked, smiled, and vocalized more to both their caretaker and to adults in general, than control infants who received no specific intervention.

The extension of this experimental approach to older children and the problem of attachment formation is long overdue. Admittedly, the experimental alteration of the mother-child relationship is, to a large extent, impractical. The mother interacts with her infant according to her perception of the child's needs - not a researcher's schedule. Mitigating against creating attachments between an initially unfamiliar adult and home reared infants are the complicated logistics of the task which include disruption of home life, an extensive time commitment, and possible ethical problems. However, fathers, particularly those who naturally display small amounts of interaction with their infants, offer a solution

to this dilemma. Experimentally augmenting attachment behaviors between low interacting fathers and their infants is both practical and ethical.

There are at least two reasons why it is desirable to meddle with the formation of father-child attachments. First, the experimental modification of attachment behavior can produce valuable information about causal factors. The usefulness of correlations is limited and it is time that we ask about the formation of attachments. To what extent can changes in parent interactions with infants alter the display of attachment behaviors? Will increased parent-initiated interactions produce corresponding increases in child initiated interactions? Secondly, the experimental investigation of the determinants of attachment behaviors appears likely to produce results of direct clinical benefit. If attachment behaviors are relatively labile, and we know how to manipulate their formation, then we can intervene in problematic parent child relationships. Ultimately, an understanding of the determinants of parent-child attachments may be used to the benefit of the child who is adopted, separated from his parents for a lengthy period, neglected, or abused.

We began this line of inquiry in a modest way. The amount and quality of father-son interaction at home was increased among initially low interacting fathers in order to assess the impact on attachment and separation behaviors in the laboratory situation.

METHOD

Subjects and Design. Twenty boys, twelve months of age, and their low interacting fathers were randomly assigned to two groups. Twelve father-son pairs received a list of games to be played each evening over a four week period. A control group of eight, low interacting father-son pairs did not initiate new activities. All children and both their mothers

and fathers were assessed in a laboratory procedure at twelve and thirteen months of age - before and after intervention. The children were examined in a free play situation with the mother and father present, and in a separation and reunion sequence involving both parents and a stranger. Thus, the design involved an experimental and control group with time of testing and one other factor such as person in the room with the child as repeated measures. In some instances Mann Whitney comparisons were used.

Father Questionnaire. To establish eligibility, fathers were interviewed on an extensive questionnaire containing three categories of interaction. First, the amount of time each father spent with his son was assessed. Father was asked to describe his routine week and weekend schedule to determine the amount of time available for interaction, and of that time how much he actually spent with his child. Second, the extent of his participation in child care was determined. He was specifically asked how often he put the child to bed, gave his child a bath, and changed diapers. Third, his sensitivity, responsiveness, and sense of importance as a parent were rated. For example, in this category, he was asked, In what ways does your baby tell you his feelings? "How important do you believe the father is during the first year of life? What is his role?" (c.f., Spelke, et al., 1973). Only fathers who were judged by two independent coders to be in the lowest third of a normal urban distribution in all three categories were eligible for this study.

Interactive Games. The primary manipulation was to increase the play time for low interacting fathers and their sons in the experimental group by 30 minutes each evening - representing a substantial increase in time. One of two sets of prescribed activities and toys were used in the experimental group. One set was more likely to emphasize high affective interaction and included the "peek-a-boo" game and a chase game in which

the father enticed the child to chase him around. The other, more likely to elicit quiet involvement, included a pointing-talking game in which objects in a book and parts of the face were described. For example, the child was asked "where is your nose? or where is the car?" Fathers in the experimental groups were given a set of toys which included a ball, xylophone, book, puzzle, jack-in-the-box, busy-box, and blocks. The games, toys, and styles of interaction were demonstrated for the fathers who were coached before intervention began.

Laboratory Procedures. Whereas, increased intervention occurred by the fathers in the home setting, assessment of the child's attachment and separation behaviors was made at the laboratory. The child's behavior was observed in a 20 minute free play session, and a successive 14 minute separation sequence. At the beginning of the free play session, the mother, father and child were brought into a living room setting, similar to those used in other attachment studies. The child was surrounded by a few simple toys and placed equidistant from both parents who were seated. The parents were instructed not to initiate interactions, but to respond naturally if the child were distressed or approached them. The free play situation was designed to assess the child's disposition to approach his mother or father for interaction without the confounding effects of parental separations or fear producing strangers. The principal measures were the child's initiation of interactions, proximity, touching, looking, and vocalizing to both parents.

In the separation sequence, one or more adults remained in the room with the child during seven, two minute sequences occurring in the following order: (MF)-M-MF-F-MF-M-MS-S. The adults were given a written schedule in advance indicating which adult was to leave on a planned signal. The measures that were recorded included play, crying,

proximity, touching, looking, and vocalization, to mother, father, and stranger.

RESULTS

The free play situation, in our view, provides a picture of attachment behaviors that is unconfounded by stress provoking departures or strangers. The relatively low level of interaction of all twenty fathers who participated in this study was reflected in the greater preferences of the children for their mothers in the free play - free choice situation. It can be seen in slide 1, depicting proximity to mother and father both

Insert Slide 1 here

before and after intervention for the experimental and control groups, that children spent more time with their mothers. Although the three variables are shown in slide 1, only the main effect for persons is significant ($F\ 1/18 = 5.94$, $P < .03$). What can also be seen in this slide, but that is not statistically significant, is the tendency for the experimental children to be more proximal to fathers and less proximal to mothers following intervention and just the opposite for control children. Duration of touching also confirmed the basic preference for the mother in this free choice situation ($F\ 1/18 - 5.71$, $P < .03$).

The principal finding in this study is that 30 minutes of daily interaction over a one month period with a sample of previously low interacting fathers and their twelve-month-old sons produced an increase in specific infant attachment behaviors that are directed towards the fathers in the laboratory situation. It can be seen in the second slide,

Insert Slide 2 here

that children in the experimental group increased the number of interactions

directed towards their fathers following intervention relative to children in the control group (Mann-Whitney, P .05). Moreover, it can be seen in the third slide, that more children in the experimental group increased

Insert Slide 3 here

looking to their fathers following intervention than children in the control group (Mann-Whitney, $P < .01$). The looking measure was significant over the free play and the non-stressful portion of the separation sequence where the father was present. Child initiated interactions and fixations in the laboratory - attachment behaviors with high face validity - apparently increased in the experimental group as a result of father initiated interactions in the home. A simultaneous, but weaker change alluded to in the first slide occurred in the control group. The child initiated interactions with the mother tended to increase among control children (Mann-Whitney, $P < .07$).

It should be emphasized that the fathers' behaviors did not change from the first to the second testing. Father initiated interactions and father fixations directed towards the child remained stable in both groups over the two testings. Thus, the changes in child behaviors observed in the laboratory appear to be produced by the children in the experimental group - not their fathers.

The second principal finding in this experiment is that increased father interaction had no apparent effect on the display of protest occurring when the child was left alone with the stranger. Two measures of protest - crying and disruption of play during the separation sequence - support the contention that the stranger alone condition is the primary source of distress for these children. The fourth slide illustrates the amount of play when the child

Insert Slide 4 here

is alone with the mother, father, or stranger, for both experimental and control infants, before and after intervention. Only the main effect for persons is significant ($F\ 2/36 = 12.47$, $P < .001$). Little distress occurs when the child is left alone with the mother or father - even though these are low interacting fathers - while the greatest amount of distress occurs when left alone with the stranger. It was also found that the crying occurred to the stranger with little or no distress when the child was left with the mother or father ($F\ 2/36 = 6.83$, $P < .005$). There were no significant differences in separation protest that were due to the experimental treatment. Moreover, it should be emphasized that whereas the free play situation was sensitive to attachment differences between mothers and fathers, there were no apparent differences between parents during the separation sequences.

In the separation episodes that were not overtly stressful to the child and in which the father was present, attachment behaviors increased slightly. Children in the experimental group touched their fathers (Mann-Whitney, $p. < .07$) and looked at them more often (Mann-Whitney, $p. < 05$) than children in the control group during the separation sequences. Thus, if stressful separation sequences are distinguished from non-stressful ones, we find that increased father interaction has no effect on the child's fear, but does change under relatively secure circumstances.

DISCUSSION

Several points are implied by these data. First, it appears that a relatively brief period of interaction - one month - can produce changes in positive attachment behaviors that are unconfounded by fear or distress. Children whose normally low interacting fathers participated in a program

of 30 minutes of daily interaction, displayed an increase in interactive initiations and fixations directed towards their fathers in the laboratory. The effect, although important and statistically significant, may have been stronger if a longer period of intervention were used. For example, Rheingold (1956) imposed a two month treatment period for the modification of social behavior in younger infants.

Secondly, the modification of attachment behaviors lends support to an operant view of attachment. The operant position most explicitly contends that attachment behaviors are the product of positive reinforcing conditions. Presumably, it is the attention and positive affect presented contingently by the fathers for interaction at home that resulted in more frequent child attachment behaviors in the laboratory situation. It should be emphasized that the treatment in this experiment was carried out by the fathers themselves and in the natural context of their homes.

Thirdly, although positive attachment behaviors in the free play situation were increased, separation protest was not affected by the treatment variable. In our view, separation protest is primarily a display of fear elicited principally when alone with the stranger. We did not attempt to alter the child's understanding of the stranger in the strange place; instead we attempted to foster the child's attachment behaviors towards his father. The data from this experiment are in accord with this distinction; only positive attachment behaviors changed.

Fourthly, it is obvious in this paradigm that the confounding effects of fear in the separation situation can obscure clear attachment preferences. All children in this sample displayed a preference for their mothers during the non-threatening free play situation, but this preference was not reflected during the separation sequences where protest when alone with the father was indistinguishable from protest when alone with

the mother.

Fifthly, this experiment demonstrates that the way a child relates to his father is, in part, a function of the way his father relates to him. Thus, the potential for clinical modification and facilitation of early parent child relationships is implied by this demonstration and merits further exploration. Clearly the adult can influence the relationship.

Finally, we want to emphasize the need for further experimental - as opposed to observational - research on attachment behaviors. It is difficult to isolate the determinants of attachment behaviors or even to operationalize the phenomenon of attachment unless we begin to experimentally manipulate those variables identified through correlational studies. This research represents a modest beginning towards using the experimental method to study the complex phenomenon of infant-adult attachment behaviors.

References

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Spelke, E., Zelazo, P., Kagan, J., and Kotelchuck, M., Father interaction and separation protest, Developmental Psychology, 1973, 9, 83-90.

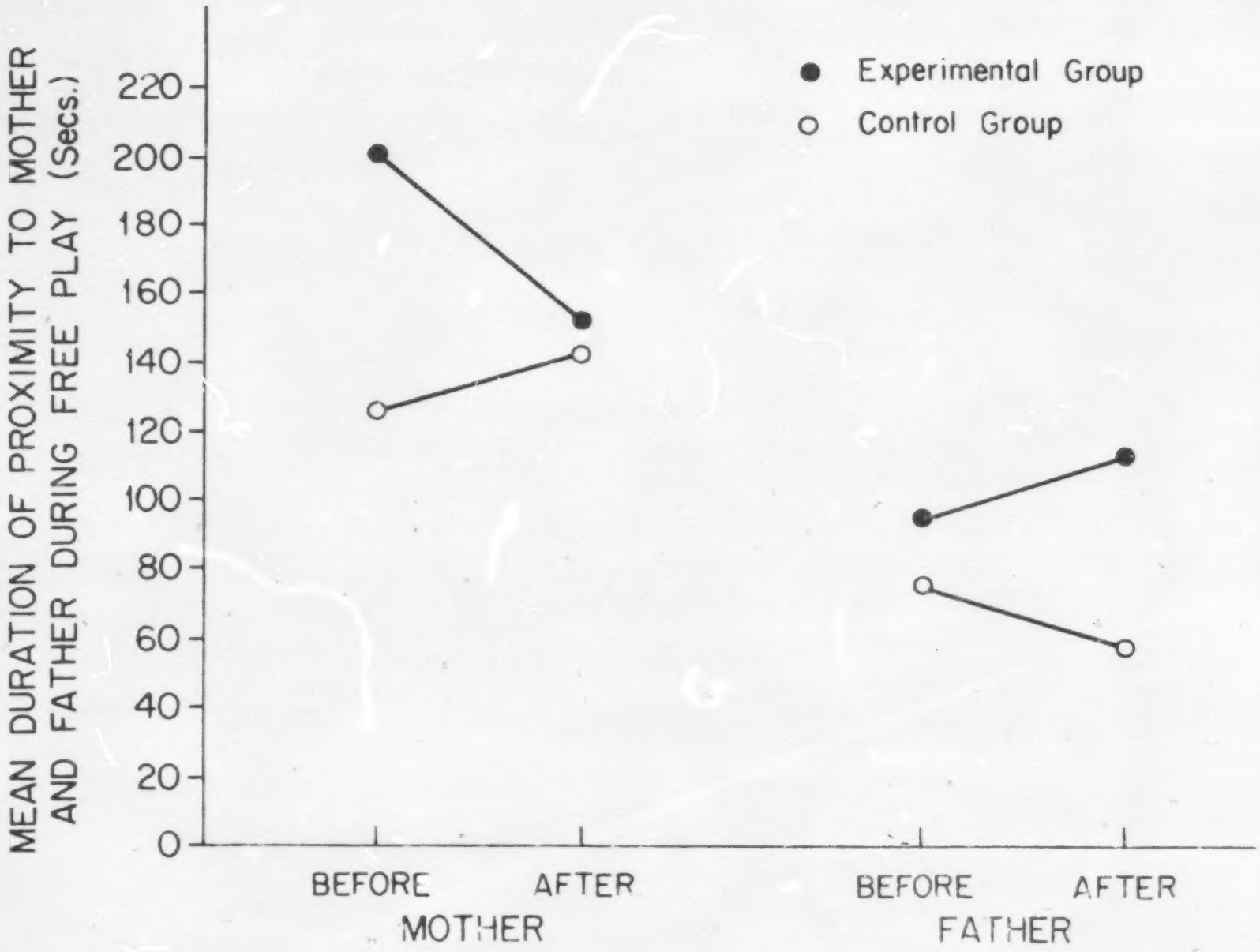
List of Figures

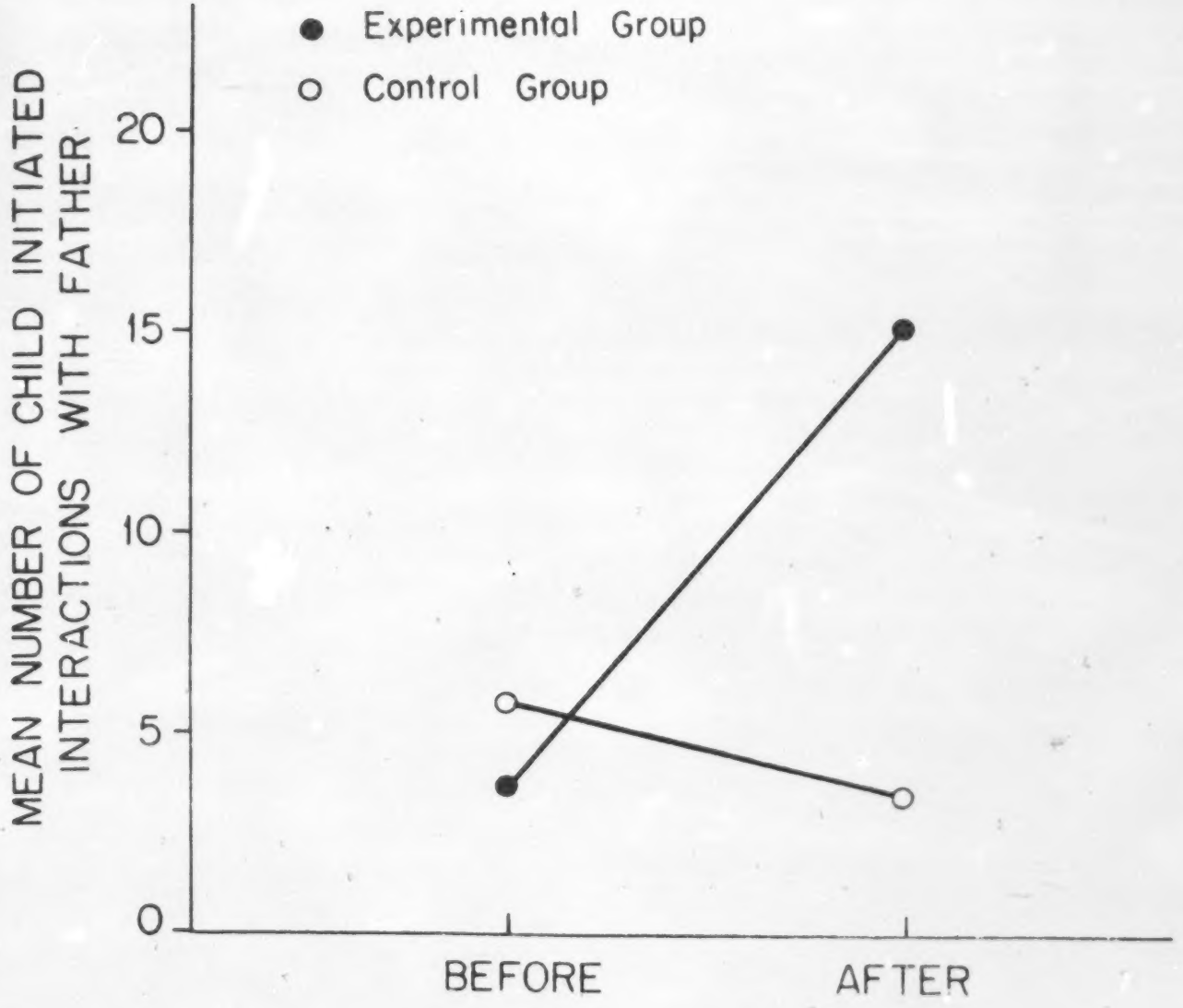
1. Mean duration of proximity to mother and father during the 20 minute free play episode for the experimental and control group, before and after intervention.

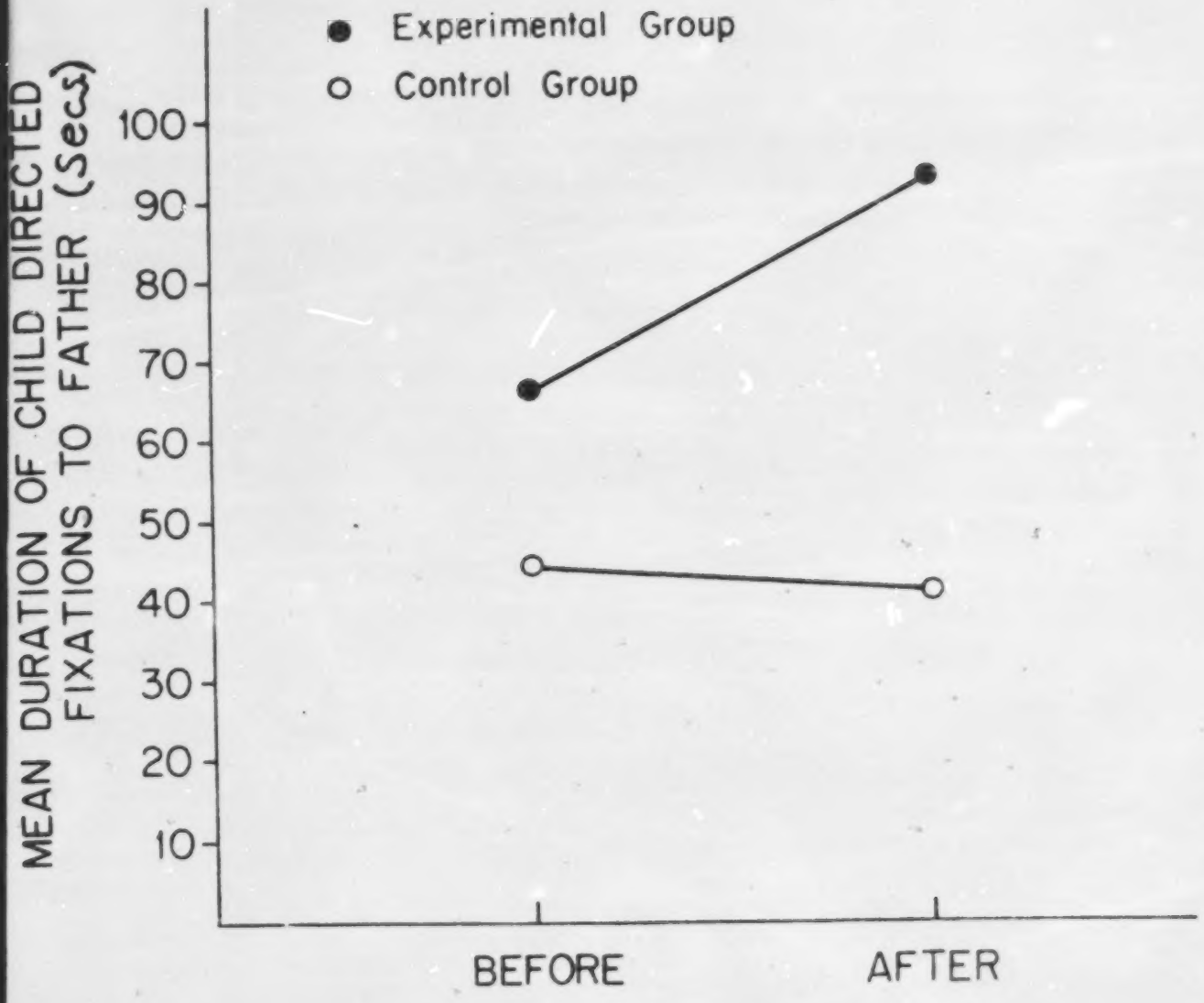
2. Mean number of child initiated interactions with father during the 20 minute free play epsiode for the experimental and control group, before and after intervention.

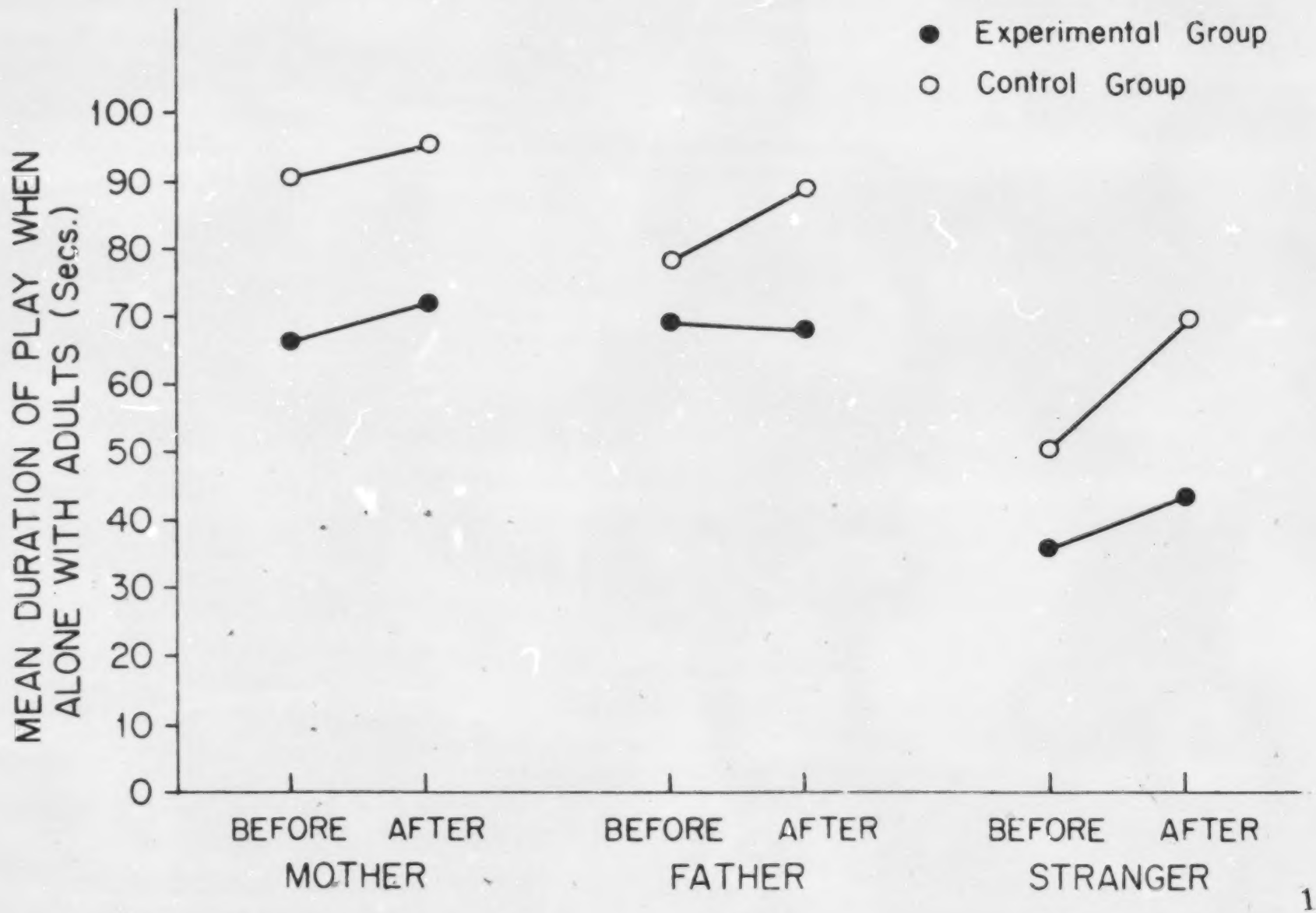
3. Mean duration of child directed fixations to the father during the entire experimental session for the experimental and control group, before and after intervention.

4. Mean duration of play when the child is alone with a specific adult during the separation episode for experimental and control group before and after intervention.


MEAN DURATION OF PROXIMITY TO MOTHER AND FATHER DURING FREE PLAY (Secs.)
220
200
180
160
140
120
100
80
60
40
20
0
Experimental Group
Control Group
BEFORE
AFTER
MOTHER
BEFORE
AFTER
FATHER


Experimental Group
Control Group
MEAN NUMBER OF CHILD INITIATED INTERACTIONS WITH FATHER
20
15
10
5
0
BEFORE
AFTER


Experimental Group
Control Group
MEAN DURATION OF CHILD DIRECTED FIXATIONS TO FATHER (Secs)
100
90
80
70
60
50
40
30
20
10
BEFORE
AFTER


Experimental Group
Control Group
MEAN DURATION OF PLAY WHEN ALONE WITH ADULTS (Secs.)
100
90
80
70
60
50
40
30
20
10
0
BEFORE AFTER
MOTHER
BEFORE AFTER
FATHER
BEFORE AFTER
STRANGER